SUGGESTIONS FOR THE CREATIVE TEACHING OF ARTS AND CRAFTS IN SCHOOLS IN INDIA

Published for
The Association of Teachers in Anglo-Indian Schools, West Bengal

by
ORIENT LONGMANS

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FOREWORD

One of the most significant and fruitful developments in our national life since Independence has been the re-discovery of our rich heritage of Arts and Crafts, and our attempt to make the children of India sharers of this heritage through the encouragement of the teaching of Arts and Crafts in the Nation's schools. The change in its attitude towards these important subjects in the staid and traditional educational world has been no less striking and significant, for we have moved rapidly during the past decade from the grudging introduction of Arts and Crafts as 'extras,' 'frills' or pleasant diversions from the study of the more serious subjects to their whole-hearted acceptance as essential and integral parts of a complete and balanced curriculum both in the Elementary and in the Secondary schools. This progressive point of view was given eloquent expression to by the Mudaliar Commission. "These subjects," the Commission stated categorically, "demand expression and achievement, with as much importance in their own way as the purely intellectual subjects, and they can be used for the education of the human mind as easily and effectively as the so-called intellectual subjects. As valuable media for the emotional side of the mind, their place is certainly higher than that of the ordinary subjects. Their inclusion in the school curricula is valuable for the proper development of the emotions, and helpful for growth of other aspects of the personality, intellectual, aesthetic and moral. No apology," the Commission concluded, "is needed today for including Art and Craft as an essential element in the curriculum."

Heads and teachers in Anglo-Indian Schools in West Bengal are in full agreement with the above view point, and the study of Art and Crafts has been made compulsory for all students studying in such schools from the Kindergarten to Class IX.

Efforts are also being made to make the teaching of these subjects as creative as possible, to make them an integral part of the curriculum, and to co-relate them with one another and with other subjects, as far as possible.

The publication of this little pamphlet is a step in the above direction. The graded syllabuses and suggestions for teaching them contained in it were drawn up by a Committee of experienced Art and Crafts teachers under my Chairmanship. A very special word of gratitude is due to Mr. S. N. Munshi, Art teacher, St. Paul's School, Darjeeling, and Mrs. P. Pearson of the Loreto House Undergraduate Teachers' Department, for their work in finalising the syllabuses etc., and getting them ready for publication. It is hoped this brief monograph will be a stimulus and help to all teachers of Art and Crafts in India.

AUSTIN A. DESOUZA,
Inspector of Anglo-Indian Schools,
West Bengal.

Suggestions for the Creative Teaching of Arts and Crafts in Indian Schools

AIM

In these days of widespread general education and of almost universal ability to read and write we are inclined to under-estimate the importance of Arts and Crafts in the total field of education. Education is a preparation for complete living; a child, when grown up, is not perfect without some sense of the Arts or Music and therefore no education can claim to be complete that does not include the teaching of Arts and Crafts. For Art is something more than drawing or painting, or it is, in essence, appreciation—that is, praise. It is a question of right feeling, of right values. It is an awareness to things of beauty and of the fact that "Beauty is Truth." It includes fuller powers of realization and gives an edge of experience. It seeks to sharpen perception, stimulate imagination, intensify the emotions and develop the intelligence. Above all, it seeks to bring out to the full all the potential powers, that lie dormant in each individual, which will enrich his whole life.

Fortunately, recently, in the West as well as in India a much greater importance has been given to the teaching of Arts and Crafts. More time is being been given to Art, and in India to Crafts, and they are being better taught than formerly. Educationists realise that, along with music, dancing and dramatics, they play an important part in training the emotions and in giving an outlet to creative power. Such subjects are of value for the psychological development of pupils, helping them to adjust themselves to life, to solve some of their problems and to become balanced personalities.

If the teaching of Arts and Crafts in the Primary Schools is to realise its full possibilities, it is essential that the aims in view should be clearly understood. The Art impulse is deeply rooted in mankind, and it appears very early in the child; first in his obvious delight in colour, and later, in his endeavours to express himself by drawing with any materials that come to his hands. In these two rudimentary manifestations appear the first crude impulses towards appreciation and criticism on the one hand, and self-expression and creation on the other hand. Therefore it is apparent that the Primary Schools ought to concern themselves with these two aspects mentioned above.

As the Primary aim of modern education is to educate the "whole" child, one cannot conceive means of realising this end without the

inclusion of Arts and Crafts, to which the children have so natural an inclination, as an integral part of all children throughout their school life.

We teachers of Arts and Crafts will defeat our purpose if we try to make every child an Artist; this is not only impossible, but also will be contrary to the theory of "S" factor. Arts and Crafts undoubtedly need this special aptitude. Let us therefore concern ourselves in inculcating the spirit of appreciating Art in its various manifestations which will stand them in good stead when they go into the world.

In the past it was considered that the basis of Art Training was the development in children of technical skill with adult standards in mind. Today we believe that the exercise of the creative impulse should be the basis of Art training, and children should be given a choice of materials with which to express and create and that representation in a literal and photographic sense should not be regarded as the ultimate goal.

One aspect of Art teaching which has been overlooked in the past is the development in children of the power of plastic expression. Their drawing comes in the main from visual images; muscular and touch images are, however, just as vividly felt by them and, because this is so, many conceive both subject-matter and form in three dimensions and should have opportunity for expressing themselves plastically. By giving children a choice of plastic materials and tools, as well as paint and paper, their tendencies towards two-dimensional or three-dimensional expression can be readily ascertained.

In India, these non-literary subjects have in the past had a stepmotherly treatment, but however it is encouraging to note that in recent years some of the more progressive schools have perceived this injustice and attempted to rectify this attitude. An excellent beginning has been made; this has only been possible due to the inspired trained teachers, sufficient materials, and favourable atmosphere.

If the children in all schools are given the same opportunities and guidance there is no reason why they should not derive the obvious benefits of Art teaching and it is in this hope that this syllabus is suggested.

Art Teacher

There should, ideally, be two Art teachers in every Institution—one for the Senior School and the other for the Junior School. If this is not possible there should be at least one.

It is desirable that the Senior Art teacher should be well qualified, preferably a Diploma holder of any recognised College of Arts and Crafts, with sound knowledge of various branches of Arts and Crafts.

The Junior Art Teacher, besides a general training, should have a special training in the teaching of Arts and Crafts to young children and she or he should work in collaboration with the Senior Art teacher.

The Senior Art teacher should teach classes from Class IV upwards, and the Junior Art teacher from K. G. to Class IV.

Where Art in the lower classes is taught by the class teachers it should be done under the guidance of the Senior Art teacher who is a specialist, and, in such a situation, the Senior Art teacher should take over the teaching as early as possible.

No class teacher should undertake or be given the teaching of Arts and Crafts who has no interest or ability in that subject.

The Senior Art teacher may be assisted by one or more teachers who have interest, ability and a fair knowledge of the subject and volunteer to work under the guidance of the Senior Art teacher.

Successful Art work in school depends on an understanding of the psychology of children's drawings, and their characteristic modes of expression at each age. Above all, success depends on the enthusiasm, sympathy, and ability of the teacher to stimulate and encourage this natural outlet, which should be judged by the joy and absorption children have in all creative effort, and by the feeling of power they have over different media, not merely by the final results produced.

Arts and Crafts Room

Every Institution should try to provide a special room for the Arts and Crafts class. As far as possible the Art teacher should be consulted as it is desirable that the room should be facing the north for light effects, spacious and properly furnished. Suitable desks, almirahs, racks, sinks and proper arrangements for displaying children's work on the wall are all essential.

The room must be decorated with tasteful bright coloured pictures, charts and posters done by the children which will be a great visual aid to their general education. These should be changed with the new

ones at regular intervals. The effect of bright colours in the Art room is most stimulating to the children.

To encourage freedom of movement when selecting their own materials, and to give added interest to the lay-out of the room, desks should be rearranged from time to time either in a circular formation or in small community groups according to the nature of work, avoiding the monotonous regimentation of seried rows of class room desks.

No special room is required for the K. G. Class. Children in the K. G. Classes should do their work in their own form room.

The assistance of an attendant in Arts and Crafts room would be very useful in keeping the class tidy, in making colours and giving out books, paints, brushes and washing etc., leaving the Art Master entirely free to teach and supervise only.

Main Objectives of Art and Crafts Teaching

ART

The Arts are peculiar to man. Though they serve no obvious biological purpose there is no form of human society in which they do not exist. It is therefore important that so fundamental a human activity should receive attention both in the Primary School and in the Secondary School.

Education in all forms of self-expression, literary, poetic, musical, visual and plastic, is necessary for building up a properly balanced personality. The latter two modes of self-expression concern us here.

Child Art

Drawing and painting is the natural language in which all young children express themselves most readily, and children of any age make use of all their powers of memory, and thought, in the process of creating. There is much educational value for the child in this work, as well as the inward satisfaction he experiences while communicating emotions and thoughts.

The Art of children does not conform to a single type; there are many categories into which their work may be classified depending on temperaments. Some work will be impressionistic, some realistic, some decorative, while others will have the quality of naivete—a vision in which such attributes as perspective and realism have no place, but

which has a direct artistic appeal. It follows that to appraise the work of children, an unbiassed outlook is necessary. There is seldom a child's drawing which lacks at least one element of artistic appeal, but to appreciate this their drawings should be treated with knowledge and sympathy. Adult standards of excellence should not be applied.

Definition of Art

The old meaning of Art in the widest sense implies skill and ability acquired through patient practice and directed towards definite ends aesthetic or ethical or useful.

In the modern and more restricted sense of the term applies only to those human activities which lead towards aestheticism, in other words the Fine Arts. And, although in a figurative way, we speak of the art of cooking, the art of war etc., neither cooking nor making war would ever seriously be included in a list of the Arts which embraces the static arts—Architecture, Sculpture and Painting with their subdivisions, and the dynamic arts—Music, Poetry and Drama. Many attempts have been made to explain the essential nature of Art, the quality which distinguishes Art from all other manifestations of human activity but most of them lack clearness, do not cover the whole field, or are capable of being extended to non-artistic activities. A number of writers on aesthetics explain it as a form of play.

There is a popular notion that Art is nothing but a representation of nature, a representation of the beauty in nature. This notion is fallacious because Art is not a representation but an interpretation, and it is not too much to say that Art begins where the Artist departs from strict imitation of nature, imposing upon her a rhythm of his own creation. Nature is the artists' inexhaustible source of inspiration, but laws which govern the work of Art are wholly independent from the laws of nature. If representational truth were the criterion of the work of Art, a good photograph would certainly have a better claim to this title than any of the Master Works of Master Artists.

In short the old definition of Art is an imitation or representation of Nature, and the modern definition of Art is an emotional imagination and creation of new form. It is an attempt to show three dimensions in two dimensions, and the "ultimate value of any Art teaching must be judged by the success with which it has inspired the pupil with a creative urge, stimulated their imagination and invention, and promoted their powers of appreciation and aesthetic taste."

CRAFTS

The teaching of a wide variety of useful Crafts should form a vital part of the curriculum, and should be allied to Art work, wherever possible.

At all stages of education manual activities play a very large part; there are few activities in which some demand is not made upon the child's manipulative and creative powers. From this point of view comprehensive schemes of handwork would closely involve almost every part of the curriculum, and from time to time schemes of work have been produced in which every subject of the curriculum has been correlated with handwork. It is certain that a general acceptance of the value of handwork in the school will lead to its use at one time or another in almost every part of the curriculum.

Up to age of seven or eight years, practically all the handwork will be illustrative or symbolical; from eight to twelve, while much illustrative handwork will still be done, there is room for the beginning of craftwork, *i.e.*, the creation of articles of use and beauty, included in the curriculum for the purpose of giving definite technical training.

It should be noted that after the infant stage, it is the usual practice for boys to do some form of handwork whilst the girls are being taught needlework. This means that about two periods per week are available for Craftwork for all children in the primary school. It should also be noted that among the many skills which are required for the successful execution of a piece of handwork, two are of prime importance, *viz.*, the skill to manipulate tools and materials and the ability to measure accurately with a foot-rule.

Art Clubs and Art Exhibitions

The formation of Art Clubs and Craft-work Guilds and the holding of Art and Craft Exhibitions at the end of the year, or at any other suitable time of the year, should be encouraged in every school. Sending childrens' work to different exhibitions and taking them on excursions to see various exhibitions will also provide a healthy stimulus to Art teaching.

Periods

At least one or two double periods a week should be provided for Arts and Crafts. These can be taken alternatively if only one double period can be provided.

It would be desirable if the Art room, at least twice a week, could be kept open out of school hours so that the children may continue on their unfinished work and make the best use of their time.

Art Appreciation

Classes in Art Appreciation are an essential complement to good Art teaching.

Evaluation of Work

From K. G. to Class V instead of awarding any marks, each completed piece of work should be marked on a five-point scale A, B, C, D and E, corresponding to the rating: excellent, good, satisfactory, fair and poor.

From Class VI and above marks may be given.

Marks may be given for half-yearly and annual examinations.

Arts and Crafts should be Compulsory for all children up to Class IX, after which it may be optional.

EQUIPPING THE ART AND CRAFTS STUDIO

Materials Necessary for the Art and Crafts Room

Schools should not make an attempt to provide all the following items at once until and unless they have been able to introduce as many of the items as possible slowly.

Art—Water Colour Work

1. Water Colour Sable hair Brushes.
2. Ready mixed powder colour of all shades.
3. Saucers and palettes for mixing colours.
4. Big sheets of Drawing Paper—Cartridge, Kent, Whatman, David Cox etc.
5. Mugs for water.
6. Flat Brush, Camel hair—1 inch and ½ inch.
7. Water colour tubes of all shades.

Oil Colour Work

8. Hog and Sable hair flat brushes.
9. Hog and Sable hair round brushes.
10. Canvas.
11. Oil colour palette.
12. Palette Knife.
13. Linseed Oil.
14. Oil Colour Tubes of all shades.
15. Turpentine.

Pen and Ink Work

16. Chinese Ink.
17. Drawing Nib.
18. Crow Quill Pen with Holder.

Lettering

19. Lining Pen.
20. Steel Pens for lettering.
21. Decorative Lettering Pens.

Pastel Work

22. Assorted Pastels.
23. Pastel paper of different shades.

CRAFT

Leather Work

24. Leather work set (Punch, six hole plier, Modeller knife, Hammer, Roller, Press stud fastners, etc.)
25. Leather stain—All Shades.
26. Spirit.
27. Sheepskin.
28. Press stud (Buttons).

Clay Modelling

29. Clay.
30. Clay Modelling Tools.
31. Spray.
32. Plaster of Paris.
33. Wire.
34. Clay Modelling Stand.

Fret Work

35. Foot Machine—Hobbies, A.I.
36. Ply Wood.

Pottery Decoration

37. Earthenware Pottery.
38. Crystal Paper Varnish.
39. Special soft brush 1" for Varnishing.

Lino-cut

40. Linoleum.
41. Lino-cutting and Printing Set.
42. Special paper for Lino-cut Printing.
43. Lino-cut Printing Ink.

Paper Cutting

44. Glossy Coloured Papers.

Potato Printing

45. Potato.
46. Printing Pad.

Furniture Making

47. Empty Match Boxes.
48. Empty Cigarette Boxes.

Furniture Making—(*Contd.*)

49. Straw Board.
50. Card Board.
51. Marble Papers.
52. Soft Wood.

Relief Work in Putty

53. Putty.
54. Mallet.
55. Hard Board.

Plastic Work

56. Plastic Sheet.
57. Plastic Instrument Set.

Fabric Printing

58. Cloth, either Cotton or Silk.
59. Designed Blocks (Wooden).
60. Colour Dishes.
61. Printing Dye.
62. Printing Table.

Doll Making

63. Felt.
64. Cloth.
65. Cotton Wool.
66. Beads.
67. Needle.
68. Thread.
69. Wire.

Basket Making

70. Cane.
71. Straw.
72. Rafia.
73. Rope.
74. String.
75. Bamboo.

Book Binding, Photo Album, Autograph Book, etc.

76. Press.
77. Book Binding Implements.

Book Binding, etc.—(*Contd.*)

78. Rexine Cloth.
79. Marble Paper.
80. Leather (Sheepskin).
81. Eyelets.
82. Coloured Papers.
83. Thick Pastel Paper (Black, Brown, Light-gray, Light-green).

Papier Mache Work

84. Old Papers.
85. Gum.
86. Tub.

Model and Toy Making

87. Wood.
88. Cardboard.
89. Nails.
90. Felt.
91. Cloth.
92. Gum.
93. Needle.
94. Wool.
95. Jute.
96. Beads.
97. Cotton Wool.
98. Clay.
99. Sand.
100. Bamboo.
101. Thread.
102. Rope.

Marbeling

103. Oil Colour Tubes.
104. Turpentine.

General Materials

105. Drawing Boards—Small, Medium and Large size.
106. Easels.
107. Pencils.
108. Erasers.
109. Board Pins.
110. Paper Pins.

General Materials—(*Contd.*)

111. Paper Clips.
112. Tracing Paper.
113. Sand Paper.
114. Crepe Paper.
115. Glue.
116. Scissors—Small and Big.
117. Hammer.
118. Hand Saw.
119. Pliers.
120. T. Square.
121. Set Square.
122. Geometrical Instrument Set.
123. Metalic Scale.
124. Paper Knife.
125. Pen Knife.
126. Big Nails.
127. Small Nails.
128. Plasticine.
129. Coloured Chalk.
130. Big Bucket or Tub.

SELECTED LIST OF BOOKS FOR SCHOOL LIBRARY AND ART MASTER

For the Art Master

1. Indian Child Art—Gay Hellier—O. U. P.
2. Education and Art—Unesco.
3. Art Teaching in Secondary Schools—Walton—Batsford.
4. The Teaching of Art in Schools—Gibbs—William & Morgate.
5. The Teaching of Art—L. de C. Bucher—Blackie.
6. Teaching Creative Art in Schools—Eccott—Evans.
7. Creative Crafts in Education—Robertson—Routledge.
8. Dryad Press Handicraft Instruction Leaflets.
9. A Course of Plastics for Schools—Feather—Blackie.
10. Pottery without a Wheel—Tyler—Dryad.
11. Paper Sculpture for Schools—Parry—Newnes.
12. Book Crafts for Juniors—Collins—Dryad.
13. Book Crafts for Seniors—Collins—Dryad.
14. Making Colour Prints—Newick—Dryad.
15. Lettering for Children—Tarner—Dryad.
16. Woodwork and Toy Making—Richard—Bell.
17. The Craft of Model Making—Bayley—Dryad.
18. Hand Puppets and String Puppets—Lanchester—Dryad.
19. Felt Toys—Machall & Roscanon.
20. Dressed Soft Toys—Mody—Dryad.
21. Leather Work—Roscanon—Dryad.
22. Woodwork—Waters—E. Arnold.
23. Metal Work—Adam & Evans—E. Arnold.
24. Text Book of Wonderland—Thomas—E. Arnold.
25. Technical Metalcraft for Schools—Ferguson—E. Arnold.
26. Willow Basketwork—Knock—Dryad.
27. Canework—Knock—Dryad.

For the Art and Crafts Library

1. The Arts of Mankind—Van Loon—Harrap.
2. The Outline of Art—W. Orpen—Newnes.
3. Style in Ornament—Evans—O. U. P.
4. Medici Society Series of Famous Painters.
5. Visual Pleasures from Everyday Things—Pevsner—Batsford.
6. A History of Everyday Things—Vol. 1—4—Quennell—Batsford.
7. The Works of Man—Phillips—Duckworth.
8. Medici Society Reprints of Famous Paintings.

9. Unesco Reprints of Famous Paintings.
10. Design in Modern Life—Gloag—Allen & Unuin.
11. One Hundred Masterpieces from the National Gallery (U.K.)—National Gallery.
12. Enjoying Painting—Ward—Phoenix.
13. The World's Masters Series—Studio.
14. The National & Tate Galleries—Wilson—Nelson.
15. Reproductions of Famous Indian Paintings published by:—
    (i) UNESCO.
    (ii) Santiniketan.
    (iii) Government of India, Publications Dept.
    (iv) Various private Publishers in India and Abroad.

SUGGESTIONS TO THE TEACHERS

From the Nursery & Kindergarten to Class III

1. The child must scribble as he must babble. It is as much a sign of dumbness when he does not scribble as it is when he does not babble.

2. The love of drawing, painting and making things seems to be instinctive in every normal child. By such means he expresses ideas about the things which surround him long before he can use the written word, and this outlet for his lively imagination must be fostered and developed to the full.

3. Always encourage the child to scribble, draw or mould. Never discourage him or laugh at his innocent attempts. Never teach him to draw or correct his mistakes for there can be no mistakes in a child's drawing. You will thus foster his creative talent innate and help him to grow up a creative personality.

4. Do not give the child ready-made toys but give him materials to make his toys—the child enjoys creating things.

5. Paper and coloured pencil or pastel are among the best play material for the young child. Let the child play with them as much as he likes.

6. Nursery and K. G. children cannot easily control water colours. They should be supplied with sufficient good quality pastels, crayons and coloured chalk.

   Only the talented children may be allowed to use Poster or Powder paint.

7. Children in the infant classes should never be encouraged to do their drawings with pencils because they are very drab and uninteresting, and for them the pencil is a difficult instrument.

8. Release the creative impulse and suppressed emotions of the child by allowing him to create freely and he will be a balanced child.

9. Constant verbal suggestions and encouragement on the part of the teacher are essential.

From Class IV Upwards

1. It is important that children should have the benefit of choosing the branches of Art they would like to practice.

2. Children should be given complete freedom of choice when selecting their colours, and should have freedom of movement in class, when and where circumstances permit.

3. Art study in Secondary Schools should lay great stress on the creative branches of Art (Imaginative Composition or Design) and not be confined to representational work such as drawing from objects or from Nature.

4. Originality of invention, and creativeness should be primarily stressed in all Art teaching, not slavish imitation.

5. All work in Design should be functional and practical.

6. Art students should be encouraged to work in a style which corresponds to the best Indian practice, traditions and customs.

7. Original Imaginative Composition should be given a much more important place in the Art curriculum.

8. As it is natural for younger children to draw from imagination and memory rather than from direct observation, representational drawing should not be introduced to a class before this need is felt.

9. In drawing and painting from life, still life or nature, qualities of line, shape, pattern and colour should be aimed at, rather than accurate representation, and each exercise should express an emotion about, rather than a photographic likeness of the model.

10. Children are greatly interested in faces—with the knowledge of the few simple relative proportions of eyes, nose and mouth, they can produce interesting results and get much pleasure from sketching one another.

11. For still life objects of real interest, having good pattern and bright colours should be used to stimulate their power of observation. Toys and models of all kinds brought by the children, give added personal interest and probably provide much more variety than available classroom examples.

12. According to season, flowers, sprays of leaves, fruit etc., give much scope as still-life models and are a prolific source of colour and pattern.

13. The habit of copying from pictures, photographs, cheap drawings etc., should be discouraged, unless the works copied are first-rate masterpieces of Art.

14. For talented senior students figure drawing, drawing from nature (out of doors), and plant drawing should be encouraged.

15. Any tendency to consider Art only in terms of examination requirements and results is detrimental to good art education.

16. The atmosphere of the Art room must be without too much restraint, as this is not conducive to the flow of ideas. The atmosphere should be Bohemian—everybody busily employed in whatever is most interesting to him. At the same time the idler must not be tolerated, and ways must be found to stimulate his interest.

SUGGESTED SYLLABUSES

Kindergarten and Class I

ART

In all our teaching the aim is to provide for the fullest possible development of each child, and since Art lessons consist of a series of activities which allow the child to think and express his thoughts freely, it is an all important part of the Infant department curriculum. At this stage the Art lesson should take the form of an absorbing and enjoyable occupation wherein the child experiments with and learns to use his tools, and where it is not the finished results, but the experience gained, both mentally and physically, that matters. While it is admitted that in the past there has been too much teaching and not enough freedom and scope given to the pupil, it must be understood that the teacher has still the important duty of helping the class to greater enjoyment and skill, both by suggestion and example.

The main media recommended are Coloured Chalk, Crayon, Pastel and Poster or powder colour only for the talented children.

It is suggested that before the picture is begun, a short bright talk to arouse interest and create a desire to draw, should be given.

1. Imaginative and Creative Freehand Work

(a) **Illustration of Stories and Nursery Rhymes.** Little Miss Muffet—Humpty Dumpty—Sing a Song of Six Pence—Red Riding Hood—The Three Bears—The Three Little Pigs—Ramayan—Mahabharat—Alibaba, etc.

(b) **Illustration of Scenes and Incidents.** (*Within the Limits of Child's Experience*). Birthday Party—Picnic—Bus Ride—Zoo—Traffic Control—Wedding—Washing Day—In the Park—A Rainy Day—Santa Claus—Shopping, etc.

(c) **Fanciful Subjects.** Under Water Scene—Jungle—Fairy Wood—Dragons—Picture in Fire, etc.

2. Pattern Making

To begin pattern making the teacher should draw very simple rythmic borders on the blackboard and instruct the class to copy them, choosing their own colours or crayons. As a rule the children quickly get the idea of making a border pattern by repeating a unit and should be encouraged to experiment with vertical, horizontal, wavy, zig-zag and

curving lines as well as alternating solid shapes (square, oblong, triangle, circle, etc.) with shapes.

Those lessons often provide suitable opportunity of starting painting. While some children are employed pattern making in crayon, the talented children may be grouped around tables on which jars of water and dishes with two or three ready mixed powder colour are placed. With hog-hair brushes, size 5—7, on big papers, make strokes of one colour and dots or dashes of different colours. Here they can learn that the brush must be dipped in the water between each colour, otherwise the colour will be muddy. They will soon discover that they can make a great variety of strokes and shapes with the brush and should be allowed freedom to experiment with form and colour. A different group of capable children should have the chance to use the point at the succeeding art lesson.

3. Memory Drawing

To give variety to the Art lesson and to alternate with the illustration and designing children might be asked to draw from memory such things as fruit, vases of flowers, or single figure subjects (*e.g.* one animal, one toy, one person, etc.).

CRAFT

1. Paper Work

(*To be used in Conjunction with Project and Team Work*).

Newspaper, wall paper, paper shapes, gummed and ungummed, crepe, brown, wrapping, sugar, tissue and corrugated paper can be used in a variety of ways for the following exercises:—

(a) *Folding*:—Practice in centre and diagonal folding should be given in the making of simple models such as booklets, handkerchiefs, spills, fans, envelopes, tents, hats, satchels, windmills, tissue paper balls and flowers. Models should be large and brightly coloured.

(b) *Tearing*:—Where possible the centre fold should be utilised when tearing mats, leaf shapes, simple flowers, animals, etc. Preliminary pen pricking simplifies this exercise but becomes tedious and must not be overdone.

(c) *Applique*:—Effective pictures of flowers, fruits, animals, etc., can be built up of coloured paper shapes.

(d) *Cutting*:—At the beginning, snipping exercises *e.g.*, snipping raffia or paper to make grass, fringes for mats, etc.,

should be given. Gradually can be introduced the cutting out of candles, leaf shapes, Christmas trees, presents, lanterns and other suitable shapes. This is followed by drawing round and cutting out various template shapes of fruit, letters to make into words (*e.g., Christmas*), numbers, animals, balloons, cups, tubs, decorations and flowers. These cut-outs can be used to make scrap books or composite pictures and friezes.

(e) *Paper Crushing*:—Coloured kite paper made into small round balls by the children of various colours, then children are given large outlines of various shapes *e.g.*, a ball, or kite, or some animal, and the children fill in the shape with the coloured kite paper balls applying a good gum. The paper balls must be placed as close as possible to fill in the shape.

(f) *Paper Twisting*:—Free paper modelling can be done by crumpling, and twisting and rolling used in combination with matchsticks, split pins, strong crayon and paste. Balls of various colours can be made, fruit, potatoes, flowers, tassels, kites, tails, birds, butterflies etc.

2. Canvas Work

With brightly coloured wool or thread, the children can produce attractive and at the same time useful articles as small table mats, book-marks, kettle-holders, etc.

3. Raffia Work

Raffia work is one of the most popular of home crafts, and has many educational advantages, for in school handicraft it has merits of cheapness and practicability, especially as with it many useful articles of attractive appearance can be made.

Raffia is readily available in a wide selection of bright and attractive colours, which appeal to children and aids them in learning needlecraft; while to those of more mature years raffia offers a media of artistic expression that is almost unexcelled.

Simple work can be done by winding the raffia over cardboard shapes, or by elementary embroidery, stitching the raffia through the meshes of canvas. Innumerable articles of decided artistic worth, durability and economy, such as Serviette Rings, Table mats, Dinner mats, Flower Bowls, Ornamental Baskets, Waste Paper Baskets,

Table Centres, Desk Blotters, Stopping Baskets. Tea-Cosy, Fruit Baskets, etc., can thus be produced.

4. Wool Work

From scraps of wool, multi-coloured balls and runs can be made while cotton wool gives a realistic effect to Christmas and snow scenes.

5. Modelling

In clay, Plasticene (Paper Mache). Young children should be allowed to experiment in their own way with clay and plasticene to appreciate the medium and so discover new forms.

Representational work should not be attempted in this stage, but older children should be encouraged to work from memory and imagination when creating animals, figures, or objects, in which they find interest.

6. Projects and Friezes

An extension of the community picture leads to the making of friezes, when the children should suggest, discuss and prepare the parts, the whole to be put together under the supervision of the teacher. Suitable subjects for such work are Spring, Summer, Autumn, Winter, Christmas, Easter, Windy Weather, Rainy Weather, the Seaside, the Zoo, the Farm, Noah's Ark, Farm, Aerodrome, Jungle Scenes, Circus, The House that Jack Built, Shop etc.

7. Stick-Printing

The principle of border and all-over pattern may be taught in a simple, interesting method through the media of stick printing. Attractive repeated pattern for dress materials, curtain cloth, tapestry, wall paper etc., can be created by this method.

CLASSES II AND III

ART

At this stage the children become more familiar with their tools and want to make a "better" picture. The teacher might occasionally draw on the blackboard different postures of people (match-stick people), different types of trees, flowers, vegetables, animals, houses, vehicles, etc., and allow the children to copy and practise them. This will be very useful to them in their future illustration as they please.

Slightly higher standard of tidiness and finish required at this stage.

1. Imaginative and Creative Freehand Drawing in Coloured Chalk, Pastel, Crayon and Poster Paints on large sheets of paper.

(a) Illustration of Stories, Nursery Rhymes, Historical facts and legends.

(b) Illustration of pictures from daily life such as—A scene from a market, Any scene from domestic life, Different activities of the school, etc.

(c) Illustration of pictures from Nature—Different Seasons of the year, Hill scene, River scene, etc.

(d) Illustration of pictures with birds and animals.

(e) Flower drawing and painting.

2. Pattern Making

(a) Making of simple pattern with alphabets, birds, animals, flowers, fruits, leaves, etc.

(b) Repeating pattern with Vertical, Wavy, Horizontal, Zig-Zag and Curving lines as well as alternating solid shapes (square, oblong, triangle, circle, etc.).

(c) Repeating pattern with playing impliments such as—football, hockey-stick, badminton rackets, cricket-ball and bat, etc.

(d) Repeating pattern with butterflies, insects, moths, etc.

3. Memory Drawing

Fruits, Vegetables, Vases of flowers, Utensils, Furniture, House, cow, dog, cat, toys, cycle, man, etc.

CRAFT

1. Paper Work

(To be used in Conjunction with Project and Team work).

Slightly higher standard of tidiness and finish required at this stage.

For details of each of the following Crafts see K. G. & Class I Craft Syllabus.

(a) Folding; (b) Tearing; (c) Applique; (d) Cutting; (e) Twisting; (f) Crushing; (g) Pricking.

2. Canvas Work

3. Raffia Work

4. Wool Work

5. Modelling

6. Little Projects

In co-relation with the reading of Geography, History, Nature study, Stories, etc.

7. Stick Painting

8. Scribbling Design with Gloy and Paints

Red, Blue, Yellow or any other paint you want keep them ready mixed in a saucer. On a piece of paper put a coating of gloy and with a flat brush of about 1 inch wide arrange these colours in rows one after the other in the order you choose. Then either with your finger or with a piece of broken comb, when you scribble over will produce an attractive design which can be used for a book-cover, book-marks, wall paper, etc.

CLASS IV AND V

ART

(*Much higher standard of tidiness and finish will be required at this stage*).

1. Imaginative and Creative Freehand Drawing in Coloured Chalk, Pastel, Crayon and Poster Paints.

(a) Illustration of Stories, Poems, Nursery Rhymes, Historical Facts, Legends, Mythological Stories, Adventure, etc.

(b) Illustration of pictures from daily life such as—A scene from a market, Any scene from domestic life. Different activities of the school, etc.

(c) Illustration of pictures from Nature—Different seasons of the year, Hill scene, River scene, etc.

(d) Illustration of pictures with birds and animals.

(e) Flower drawing and painting.

2. Pattern Making

(a) Making of simple patterns with alphabets, birds, animals, flowers, fruits, leaves, etc.

(b) Repeating patterns with Vertical, Horizontal, Zig-Zag, Wavy and Curving lines as well as alternating solid shapes (square, oblong, triangle, circle, etc.).

(c) Repeating patterns with playing implements such as football, hockey stick, badminton racket, cricket ball and bat etc.

(d) Repeating patterns with butterflies, insects, moths, etc.

(e) Repeating patterns with building, ships, cars, planes, toys, etc.

3. Memory Drawing

Fruits, Vegetables, Vases of flowers, Utensils, Furniture, Horse, Cow, Dog, Cat, Toys, Cycle, Man, etc.

4. Figure Drawing (Pastel, Crayon and Paint).

(a) Simple poses to help the understanding of the make-up of the body.

(b) Portraits—Simple Construction of the Head.

Children are greatly interested in faces; with the knowledge of the few simple relative proportions of eyes, nose and mouth, they can produce interesting results, and get much pleasure from sketching one another.

CRAFT

(Slightly higher standard of tidiness and finished work than that of Kindergarten is required at this stage).

1. Paper Cutting and Pasting

At this stage children are interested in making for themselves individual books, diaries, scrap books, blotting pad, Calendars, Greetings cards for special events. Programme convers. Tear off pads, shopping lists, large folders to keep their own work. All these articles made by the children may be decorated by cutting out designs in coloured glazed paper and pasted on to the article. Coloured shapes may be used for design, also coloured silver paper designs give interest. Decoration should be varied as possible and the children should have freedom in the expression of their ideas.

2. Stick Printing
3. Stencilling
4. Photo Printing
5. Canvas Work
6. Raffia Work

For details see Kindergarten & Class I Craft Syllabus

7. Modelling—in Plasticine, Clay and Putty

8. Wool and Jute Work

(1) Make a small frame of cardboard, say 6 inches square. Punch holes, say 1 inch apart. Use this frame to teach simple stitches for use in hand work. Lacing cards make satisfactory frames.

(2) Rugwool on rug canvas provides a good medium for stitches. When canvas is used, grade down the canvas and the wool thickness as practice is given. In this work, kettle holders, shopping bags, pochettes, etc., can be made.

(3) Pupils should be encouraged to plan their own designs and colour them. Guidance in colour and pattern should be given, on a limited scale, but there should be the utmost opportunity for free expression.

9. Model Making

A community model set up in a sand tray. or on the floor in a corner of the class room, is a source of great interest to the children. This should be kept very simple. In the early stages

for example, a street crossing might be made thus:—Cardboard boxes for shops and houses; strip of coloured paper for crossing and strips of different papers for pavements; pipe cleaners with beads on top of beacons; cut-outs or aloplast models for children. The youngest pupils might be allowed to bring their toy vehicles to set in the street while advanced scholars should attempt to make everything for the project. Similarly the park, the sea-side, a station, a shop, a flower show, a snow scene, etc., could be built. When the children understand what is required in building these models, they should be encouraged to use their own ideas.

Models made from cardboard paper waste—pieces of wood or materials, *viz.*—houses, dolls, cars, trees, etc., are good examples of design possibilities. The construction from these of model Town, Village or Farm, etc., is excellent for group projects in the Art Class and should be co-related to other subjects.

10. Papier Mache Work

Paper is constantly in use for various purposes, specially in the school, but its possibilities as a material for Craft-work are not exploited as much as they deserve to be. After writing, drawing, and colouring, the uses of paper would seem to be exhausted by most teachers, but this is far from being the case, as may be seen after due consideration. Papier Mache Work, out of all paper work, is the most interesting and has many possibilities. Many articles can be fashioned from it for its plastic nature makes it easy to adapt to almost any contour, and the value of such exercises in the class can hardly be over-estimated. In the first place, it causes the material to be regarded from another point of view, apart from that of drawing, writing, etc., while its qualities and characterestics are more fully exploited, which leads to a keener appreciation of its usefulness. Secondly, the combination of hand and brain work in the conception and execution of the articles is calculated to form a lesson of real educational value.

For this work we shall want some paper of poor quality (old newspaper is as good as anything), some paste, a bowl of water, a mallet or block of hard wood, and a basic form upon which to build. A saucer or plaque of china or metal will provide a good basis to commence with. Tear the paper into squares of an inch and a half, or two inches. Do not cut the paper, because tearing frays the edges and enables them to lie

flatter. Place the torn pieces in a bowl of water and allow them to become thoroughly saturated. Remove them from the water and squeeze as much moisture as possible out of it. Soak a sheet of paper, large enough to cover the inner or outer surface of the plaque (whichever is more convenient), and lay it in position upon the model. This serves a double purpose. It keeps the paste off the china, or metal, and enables us to withdraw the papier mache with ease, and also provides a good surface to the finished work. Brush some paste over this sheet and commence laying the small fragments of soaked paper side by side in a series of rows, beginning at the outside and working evenly inwards towards the centre. It is essential that the paper should be laid uniformly to ensure an even thickness. It is a good plan to arrange the first layer with the type running the right way up, the second layer with the type upside down, and so on alternately until the desired thickness is obtained. This lessens the danger of piling too much upon any one part. See that every part is covered with paste before the next piece is laid upon it, and apply as much pressure as possible with the mallet or block of hard wood from time to time. This is to ensure a compact, homogeneous material, and it should be remembered that the greater the pressure applied to it, the harder will be the papier mache. When complete, allow it to dry thoroughly, and finish with glass-paper. The edges are trimmed with a file or a sharp knife. The napkin-ring is built upon a strip of card, coiled into a cylindrical form, and strengthened with paper pulp. The Cup and Vase need some consideration, as the basic form cannot be removed from the papier mache unless it is opened sufficiently to allow for its passage. For this purpose it is necessary to slit the papier mache down one side (with the point of a sharp knife) before it has dried sufficiently to lose its elasticity. Gently ease the material away from the vase until it can be withdrawn. Bring the edges together again with paste or glue between, and add another layer or so of pulp to restore the strength and rigidity. Tea-caddy is cut from card, which is glued or pasted together to form a basis for the papier mache, which is applied until a suitable thickness is reached. Many objects, such as boxes, caskets etc., can be made in this manner by commencing with a framework of card, and building upon it.

Composition—Paper pulp, combined with plaster of Paris and glue into a stiff paste, can be pressed into moulds and used

as relief ornament on forms, boxes, or other articles. Whiting, pulp, and glue is another useful composition. To obviate the danger of the composition adhering to the mould, a coating of shellac or oil should be applied before the pulp is pressed into it. When the papier mache is finished and smoothed with glass-paper of varying degrees. the decoration should be added. A ground colour will be necessary which may be composed of powder-colour ground in turpentine, and a little gold size, or in shellac. Oil-colour or even poster-colour, if opaque. are also useful. When thoroughly dry smooth down with fine glass-paper and apply another coat. When this is dry it is ready for the ornament, which looks best if painted directly with oil, or poster-colour, or other opaque medium. A coat of varnish will serve to brighten and preserve the work. Lacquer is another mode of decoration which is capable of producing very charming results. The Chinese, Japanese and the Kashmirees are wonderfully skilful in the Craft.

11. Toy Making

"Stand up" toys involving simple cutting with scissors—animals, trees, figures. For group work—the Zoo, the Farm. Folded Toys, introducing cutting and folding—boats, animals, split-pins may be used with K. G. cardboard and strong paper.

Twisted and rolled toys made from newspaper twisted round wire frames,—dolls. animals, decorated with paint and crepe paper.

Dolls may be made out of old stockings, also out of pipe cleaners, paper pulp and waste cloth. Simple designs like the duck cut out on towelling, or lint makes a good soft toy.

Various animals may be made out of twisted wire or strong white rope as a foundation and covered with cloth. clay or paper pulp.

12. Little Projects in co-relation with the reading of Geography, History, Nature Study, Stories, etc.

13. Scribbling Design with Gloy and Paints

(See No. 8 of Kindergarten & Class I Craft Syllabus).

CLASSES VI AND VII

ART

1. Original Imaginative Composition in Colour

Exercise on one-figure composition should commence at this stage. This does not necessarily mean that all Imaginative Work should be of the one-figure type; the principal figure might be composed to fill the given space and the subsidiary figures arranged to satisfy both composition and subject matter.

(a) Composition of Picture from Stories, Poems, Nursery Rhymes, Historical Facts, Legends, Mythological Stories, Adventure, etc.

(b) Composition of Picture from Nature—Different seasons of the year, Hill scene, River scene, etc.

(c) Composition of picture from daily life such as—a scene from a market, any scene from domestic life, a street scene, a scene from the river or sea-side, different activities of the school.

(d) Composition of picture with birds and animals.

(e) Composition with flowers and foliage.

2. Introduction of Simple Still Life in Pencil

3. Figure Drawing

Portrait and full figure in Pencil, Crayon and Paint.

4. Introduction of Quick Pen and Ink Sketches of

(a) Moving figure.

(b) Landscape.

5. Textile Designs

Repeated pattern suitable for Curtain cloth, Tapestry, Wall paper, Dress materials, etc., in not more than four colours.

6. Introduction of Simple Lettering

7. Introduction of "Alpona" on Coloured Paper in White Paints

CRAFT

1. Stick Printing
(Repeated pattern for dress materials, Curtain cloth, Tapestry, Wall paper, etc.)

2. Stencelling

This useful and widely employed method of decoration has many possibilities, ranging from the simple border pattern used by the house decorators, to the elaborate patterns of the Japanese, and the figure and landscape panels executed by modern artists. The process is a simple one, merely cutting shapes from paper or thin metal and dabbing colour through. The only tools required are:— a sharp pointed pen-knife and oil-stone or strip of emery cloth for the sharpening. Some stout cartridge paper and a sheet of glass or cardboard for cutting on. A few stencil brushes, some water colours in different shades, and saucers. Shellac is useful if stencil plate is to be used much. In designing a stencil plate it is necessary to bear in mind that each shape must be bounded by paper, and all parts linked together by ties. The result is, in a single plate stencil, that the pattern consists of a series of shapes, bounded everywhere by the back-ground colour. It is particularly useful for repeating patterns where the unit requires printing a number of times, for once the pattern is cut it can be used as often as desired. Having prepared a design for a stencil, either directly on the paper to be cut or on a separate piece, and traced it through to a stout Cartridge paper. the next procedure is to give it a light coating of Shellac. When thoroughly dry the plate should be laid on a sheet of glass (this gives a clean sharp edge) or cardboard, and with a sharp-pointed knife the shapes required are cut away. If the design has been carefully considered the plate will hold well together, and be in on danger of falling apart. Before cutting, a good plan is to darken in, or lay a wash of colour over the parts to be cut; this avoids confusion. In this process the necessary ties should be frankly accepted, and made to form a part of the design. The veins of leaves, markings on fruit and flowers, buds, twists and knots in stems, can all be taken advantage of, and utilised to break up a line that would otherwise be too long and weak. There is a character about stencilling peculiar to itself, and any attempt to paint out ties afterwards destroys the character and thereby enfeebles it. When the plate is cut it is laid on the surface to be stencilled and the colour dabbed through with stencil brushes. Water colour. oil colour. dyes, or wood stains may be pressed into service but care must be exercised not to use the colour too thin as it will ooze under the edges and blurr the impression, which should be sharp and clean-cut. A little experience will soon teach you how dry your brush should be. A separate brush must be kept for each colour, which can be varied at will. This is one

of the charms of the process, the ease with which the colour may be varied. You may start a shape in blues and graduate it into greens or purples, and so on at will.

4. Potato Printing

Take a potato and cut it across and then cut down the sides so that a square area is left for drawing the design on. The area should be cut smoothly or a clear print will not result. When the design is drawn on to the surface with the help of a sharp pencil, cut away the necessary parts of the surface that is going to do the printing, either with a knife or with a lino-cutting tool.

When we come to take the print, the uncut portions will leave an impression on the paper and the part cut away will leave a blank and so we get our pattern.

Ink for printing from photo blocks can be made from ordinary water colour, a powder colour. The paint can either be smeared on to the block with a paint brush or the block can be pressed on to a little pad of felt or blotting paper placed in a saucer and well soaked with paint. In both methods a fresh application of paint must be made between each print or the tone will not be even. A few practice prints should be made on scrap paper to see how much paint is needed before printing on the final paper.

The paper used for block printing should be slightly absorbent. Cream laid will not do because it has a slight 'finish,' but cartridge paper and cheap unbleached paper do very well. If a strong, dark paper is used, brown or blue, the final prints make useful covers for books, note-books, folders and other objects. A pleasant effect can be obtained with white paint on dark paper but unfortunately, it does not wear well so should not be used for book covers.

Border patterns, or all-over patterns, simple repetition, repetition in which the unit is turned in different directions and the 'drop. repeat' pattern can all be effectively used. Care is needed to get the repetitions in straight lines and to get the paint uniform in tone. Almost any cuts on a block will give a pattern. The pattern should be rather bold; lines, oval shapes, or cut away areas can be combined.

To obtain a pattern in two colours, a second potato block must be cut. Prints, or patterns, in two or more colours can be obtained by cutting extra blocks for each colour. These are printed over

the first block and a very effective result obtained. Care and skill are necessary to fit the parts of a coloured pattern together.

This craft of potato cut and printing demand a good deal of care, accuracy and perseverance. The prints make such attractive book covers and endpapers that this art craft can be combined with book-binding.

Potato blocks will not keep beyond the day on which they are cut, as they dry up.

N.B.—For more details consult:

(1) Children's Work in Block Printing—by R. Tanner.
(2) The Teaching of Art in Schools—by E. Gibbs.

5. Canvas Work

6. Raffia Work

7. Wool and Jute Work

8. Modelling in Plasticine, Clay and Putty

9. Model Making

11. Toy Making

10. Papier Mache Work

12. Scribbling Design with Gloy and Paint

13. Marbeling on Paper and Pottery

In empty poster colour bottles or in empty cigarette tins mix all the different shades of oil colour with turpentine and put a stick (an ice-cream stick is best suited for the purpose) in each bottle or tin. Take a fairly deep bucket with water in it not full up to the brim. Then with the help of those sticks take the paints and splash them on the surface of the water. The water must be still. You will see that the paints, being mixed with turpentine, will start running one into the other forming a lovely design.

Now give the children a piece of paper or a pottery (an earthenware Vase, Bowl, Ashtray, Candle stand, etc.), having a plain coat of any shade of water colour. Then let the children, in turn, hold the two top corners of the paper and the rim of the pottery carefully. Let them dip the paper and the pottery slowly

into the water up to the place they were holding and take them out of the water as they were dipped. Care must be taken to see that the water is not disturbed at all. When the things are taken out designs, floating on the surface of the water, get stuck up on to the surface of the paper and the pottery. Allow them to dry. The paper thus designed can be used as Book marks, Marble papers for book Craft, Wall paper etc. The pottery when dry has to be given a coating of crystal paper varnish.

14. Fret Work

It is a special branch of Handwork, but may also be worked conjointly with other forms of Handwork in the making of articles.

Tools and Materials. A fretsaw-frame fretsaw-blades, pliers, small drill, cutting board. small screwdriver, sandpaper and files.

Thin wood, 3-ply wood from cigar boxes and thick strawboard are the chief materials.

General directions. Frames for the saws vary in size, large frames are normally used for heavier work, but the normal sized frame will do adequately. Distances between the saw and the back of the frame vary from 10-16 inches frames. The ten inch frame will do. The blades also vary in thickness according to the thickness of the wood used. But the fine blades can be used for the types of wood mentioned. The blade must be very firmly fixed between the two frame ends with screws etc. The blade must be comparatively taut in order that the turns may be taken without the blade snapping. Inexperienced hands will snap the blade more often but practice will soon make them more adept.

After the frame is fixed on the edge of a table then the piece of wood that has already got a design traced out can be placed on the cutting frame which projects out in a M-shape to facilitate cutting and taking curves etc. If we wish to start cutting right in the middle of the piece and cannot cut across without spoiling the design, then we must bore a hole at the point at which we wish to start. We then place the blade in the hole and then the frame is put on from the outside.

The blade must always be kept in a vertical position. Never force the saw, go back and start forward again. Do not be in

a hurry to press forward. The result will be a number of broken saws and split wood. Remember the downward stroke is the cutting stroke. When going around a corner ease the blade around and do not take sharp turns. When fixing the blade on the frame, make sure the cutting teeth are facing downwards.

Suggested articles. Simple designs should be cut out for practice. Then the children under the guidance of the teacher can make book-ends, picture-frames, bag-handles, watch-stands, book-rests, jig-saw puzzles, tie-racks, doll-furniture, coat-hangers.

After the articles have been cut out all the rough edges should be filed down and then finished with sand-paper. Painting with oil can make the articles more attractive. The children should use bright colours on the articles they make. Designs should be supplied in the beginning, but later there should be scope for imaginative creation.

15. Pottery, Moulding and Decoration

At some time or other almost every boy and girl has dug clay from a field or a river bed and made things with it, animals, dishes, or just little round marbles. When these objects were left in the sun, they dried and became hard. Many thousands of years ago cavemen probably discovered that same thing but no one really knows when the Art of pottery, or making things with clay really began.

Perhaps the beginning of pottery was the habit of prehistoric man to line his baskets with clay and keep them watertight. Many of the old pieces that have been found have the impression of baskets on the outside. This clay the primitive people found on the ground or in the river beds. They worked it with their hands and feet until the stones were out and it was smooth and pliable enough to push into shape. This moulded object was then dried in the sun. Later on it was discovered that fire made the clay much harder, so at last these early people had a container in which they could cook that would not burn up when placed in the fire.

At first the pottery was crude and without artistic shape. It was only for use. Each region produced a different shade of colour of clay, black, gray, red, brown and so on. When clay from two or more regions was combined, different colour effects were noticed and admired, and so the decoration of pottery began

The Art grew in every country. India. Egypt, Italy, Greece and many others. It is interesting to know that many of the dishes, jugs and vases that we use today are copies of those made by them so many centuries ago. Each country had its own style, colours and decorations. An expert today can tell when and where a piece of pottery was made by looking at it. Since it was customary to bury the dead with jars of oil and pieces of pottery, we have many of these priceless bits today.

The Chinese were the greatest masters of pottery at all times. Three thousand years before Christ lived, they produced porcelain, which is clay with a glaze over it, so beautiful in colour and shape that it was one of the wonders of the medieval world, and still is a wonder today. Although many people have tried to imitate their work, no one has succeeded. These masterpieces of the Chinese gradually became known as "Chinaware," and from this comes the word we use so much "China."

In our schools it would be practically impossible to try to produce such glazed china pottery, mainly because of its high cost for establishing a workshop, and secondly for want of proper expert technical hands. So in this chapter we will only discus about the shaping pottery by different methods of baking, and how to decorate them with ordinary water, oil or enamel colour and varnish them with crystal varnish to have a shiney effect.

There are three main types of pottery. Two are called hand-built:—(1) Coiled pots, and (2) Slab pots and the third is turned pot on a wheel. These may be looked on as the principal ones for class work. but the craftsman should by no means neglect them, following in principle the methods laid down in this chapter. For coiled work in schools, after some simple talk on the subject generally, including if possible blackboard drawings suggesting possible pots. each pupil should make a reasonably careful drawing of some pot that she proposes to make. She should be encouraged to suggest her own shape. wise limitations being (1) dimensions about 3 inches high, 2 inches wide, and about ¼ inch at the thickest part; (2) the lines of the pot must be simple and practical. "Art" pots are not wanted: the most beautiful is that which serves its purpose best and does so as nicely as may be. It is good for the teacher to suggest some definite subject. *e.g.*. an ash-tray. pepper-pot. or a jug. according

to circumstances, to go over the needs which such things serve, and give indications of how the worker's versions should try to meet them. A great point should be made of discussing the drawings, and, once approved, departure from them should be strongly discouraged. The pupils must early learn that the object is to control the material and make it do within reason what is in their minds (hence the advantage of approving only very simple and feasible forms at the start). It is well sometimes to connect up with the geometry lesson and, showing the plan and elevation of some carefully thought out pot, let the whole class work at it.

The soul of claywork is freshness and clean handling. "Tinkering" with the clay, specially when it has been added to the pot, is greatly to be deprecated. Try to get the children to handle the clay only when necessary, and as far as possible to do what they want to do in a direct fashion and then leave it alone. The ideal is either to add clay to the pot or to take some away, and to avoid maltreating the shape of the pot itself by pushing it in or out where the lines of it are wrong. This latter kind of thing amounts usually to an effort to pay one child by robbing the other.

Particularly with very junior classes, circumstances alter cases, and the above is not laid down in the spirit of the laws of the Medes and Persians. But it is really of the utmost importance to bear the real object of school-pottery in mind throughout: by enlisting the sympathies of the pupils with an astonishingly attractive material, and by getting them to feel that they are being led rather than pushed, the essentials of the matter can always be secured.

Each pupil will need an old drawing or similar-board (half Imperial size), a modelling tool, pencil, compass, ruler and paper. Before the lesson take some clay from the bin, test it by rolling out a piece on a smooth board (both dry and clean) into a long coil about the diameter and twice the length of a lead pencil. If you can do this without the clay adhering to your fingers or to the board it is not too moist and if it does not break or crumble when coiled once or twice round a finger serpentwise it is not too dry. If the lump taken does not satisfy the test, it will be absolutely necessary to find a lump that will. A genius could not make pots out of clay in the wrong condition, and if a class cannot "get on" the trouble is very frequently due to the state of clay.

For coiled pots the clay should be in a state handsomely to satisfy the test. If the first lump taken is slightly under suspicion it can possibly be used for "Slab" pots. The clay for these should be slightly harder. Any apparent difficulty over these fine, but very essential, points will quickly disappear after a little experience. Provide each member of the class with a ration of the clay, getting each into the habit of testing the clay for herself in the manner laid down before starting work. Each child's clay should be kept beside the board provided, and normally covered with a piece of damped absorbent material—old blanketing or good, non-fluffy, close-woven house flannel is excellent—to prevent it from drying and losing condition in the course of class work.

COILED POTTERY

A circle of the size of the base of the pot is drawn with the compass on a piece of paper. The pot is made on it. This plan leaves the drawing-board free for rolling coils: incidentally, the arrangement will save many odd pieces of clay from falling on the floor. Each pupil now makes about 20 rolls of clay about the thickness of a pencil and three times as long. Small pots usually need thin coils, large ones call for thick. The workers should try to aim either at delicacy or "Leftiness": thin coils for large pots are apt to lead to nondescript, characterless effects. One of the coils is taken and the base of the pot commenced. You start from the centre of the circle and form the coil into a neat, light disc. One coil will possibly not be sufficient to carry the edge of the base to the circumference of its circle, hence you continue with another, first joining it on. This joining must be very carefully done, the two ends being welded thoroughly together: the idea is not so much to conceal the join as to prevent minute holes being left, and to prevent variatious of thickness in the coils of the pot as a whole. To have these would mean having gaps in the walls. It is not good workmanship to allow variatious to develop and then fill them up afterwards. Some people cut off a little from the end of each coil before use in such a way as to leave a definite end of the same diameter as the rest of the coil. With large or specially important pots it is advisable to work always with such ends, setting the end of the new coil to the end of the coil already in place, and then with the modelling tool lightly "nicking out" the side of the junction, filling it in neatly with a piece of clay of the same consistency.

When the base of the pot has been so formed as to fill the circle on the paper rigorously scrape out each seam or interstic between

adjoining coils with a blunt pencil, fill in the channels thus left with softer clay, and methodically smooth the whole of the coils down so as to give a level surface top and bottom. The base is a vitally important part of the pot, and there is always a tendency for the coils to open up in the firing and leave a flaw unless care is given.

The "walls" or sides of the pot are now commenced. Take a coil, slightly tapering one end. Attach this end to any point on the circumference of the base, and lay the coil all round until the head of the coil meets the attached end. Do not then out the coil but continue on spirally. When that coil is finished take another, join it, and follow the same method until the shape is complete, stopping at every half-inch or so in the height of the wall to scratch out the inside joins, and fill up as in the base, giving the junction of the wall with the base special attention in this respect. If the work is very carefully done the pot will hold water when fired, even if the outsides of the coils are not smoothed.

Building with coils on the method suggested generally results in a "loose end" at the top. This can be prevented by the use of a tapered coil before making the top edge and then making the latter of one neat, circular coil. But, on the other hand, the final tip of the coil may be made use of. It is suggested handles or knobs where called for, and so on.

It is not necessary to complete the pot in one lesson, so long as it is stored away in the damp box. Indeed, pots with much "overhang" (*e.g.*, one with a narrow base and wide pot) cannot be finished in one operation. Especially with a large piece, the lower clay must be allowed to harden somewhat so as to take the weight nicely, although the top coil of it must be kept damp. It is possible to make large work in two or three separate sections, keeping all edges moist and joining them subsequently all together. For this adopt not only the raking-out method but also use slip to make sure of the join. But joined-up pots are not really desirable, specially for every young workers: the unity of the pot as a whole is apt to be lost.

Museum visits are twice as interesting after a few lessons, and the teacher will be able to evoke sympathy with the tribulations of early folk as, with that joyous thought and care which is the basis of all true art, they made a simple pot for use, decorated it in the same happy spirit as a bird puts gay feathers in its nest, and then fired it as best they knew all too often, alas, splitting or cracking it.

After some work on very simple shapes, the way is open to ambition. Although the potter's wheel is quicker, there is little that you cannot do by coiling if you are skilled enough. With very many the coils themselves are a wonderfully fertile source of suggestion, both as to form and enrichment of that purest sort arising from the method of construction. Once workmanlike habits have been established, it will not always be found necessary for the shape to be drawn beforehand. Indeed, it should be the objective eventually to work directly in the clay because this leads to a real exploitation of the qualities of the material. But it is absolutely essential that beginners be able to get correctly the spirit of any practicable shape they start on: there is great temptation to wander off the narrow path of intention, and where there is any tendency to this the pot should be drawn first.

SLAB POTTERY

Another method of building, most useful but hardly affording the scope that coiling does, is to flatten clay into sheets and from these cut suitable pieces with which to build up pots and lids. In deciding on shapes, avoid the fallacy of merely reproducing tin tea-caddies and similar metal things. Much more variety of shape can be obtained with clay, and there are many articles of food much more suitably kept in pottery than in metal, to say nothing of cigarettes, tobacco, and many other things, like pot-pourri, equally well kept in either.

It is not worth while to make round things from slabs, if only because the bending of the slab to make it circular is contrary to the nature of clay. Angles are the essence of the slab pot, but it may be mentioned at once that they should not be left as angles on the interior of the article—they form corners, often annoying in, for instance, a jam pot, and should be filled in with clay, incidentally a means of strengthening them. For older folk the making of, for instance, a hexagonal pot is very real training not only in handwork but in applied geometry.

To start, lightly tack a piece of old linen or muslin to a drawing board. Having first rolled the clay into fat, short coils, place two side by side on the muslin. Press the edges well together and proceed to unite them into the beginning of a flat sheet by "hammering" with the fist. The thickness of the sheet should be about 3|16 inch. To this beginning add other fat coils, flattening as you go, until the sheet is complete. If hollows develop, cut out the piece of clay concerned and replace from a fresh supply. The object is to get a perfectly flat

and thoroughly-welded sheet, and a final levelling is given by passing an old ruler over the surface. A life-size drawing will have been made on thin paper, showing the base of the pot with the sides projected off (but not allowing for the thickness of the clay). This is now laid on the sheet of clay and its outlines very lightly traced over with a sharp pencil and ruler in such a fashion that they are transferred, clean and sharp, to the clay. Now strip the paper off, get a sharp, thin knife, and with the assistance of the ruler carefully cut along the lines to serve the segments of the pot and cutting around the base first. Hold the knife upright and go a little farther than the lines at angles other than those of the base, just as a carpenter does when sawing to a corner: this avoids "buckling" the clay at the extreme corners of the slabs. If the clay does not allow the knife to move comfortably through it, set the task aside for an hour or so to allow of hardening: the slabs must have thoroughly good edges. On completion of this stage the muslin is untacked and the whole job drawn to the edge of the board, where the slabs are transferred from muslin to a sheet of newspaper, they should be kept quite flat and unbent and the edges must not be dented. The sides are now stood against (not on) the base. If the knife has been managed properly there will be a right-angled space at the outside of each corner. Roughen the edges with a pencil and press a roll of clay into each corner. With the pencil well roughen the junctions of the slabs on the inside and press further rolls into these, doing the same with the base inside and outside. With some shapes it is best to finish up each slab in the course of putting the segments together. The interior fillings mentioned should be of ample size, so as to make round "corners" and not square ones. Much interest can be given by making decorative use of the exterior fillings, emphasizing them with simple modelling and so forth, but in so doing remembering the necessity of keeping to the average thickness of about 3|16 inch.

TURNED POTTERY

The potter's wheel is to the craftsman what a brush is to a painter. Even in school some knowledge of the wheel (on which a ball of clay is "thrown" for working purposes) is almost essential to a really good understanding of the full field of the potter. The purchase of one for a school must be determined by circumstances. Much practice is, in most cases, needed before proper use can be made of it, although some who are hopeless at hand-building are much happier with the wheel. Every student may be relied on to feel its fascination, however,

and if time permits it is something of a pity not to include some work on it. But it is most essential not to allow the facility with which clumsy wheelwork can be produced to tempt young pupils away from the solid and substantial benefits of hand-built work. After all, little can be done on the wheel that cannot in the long run be done by hand: indeed, with built pots there is even greater freedom for those subtleties and the freshness in detail that that so largely make the charm of a really individual thing.

Buy a wheel only on the basis of practical experience or good advice: the best are those made by practical potters which, in this country, is made of common earth, straw and wood. It is rather primitive in its form and shape and is very difficult to use specially for school children unless they have a long and constant practice of its use. So it is suggested that a very heavy wheel, made of iron which rotates on a ball bearing iron pivot may be installed in schools. As it revolves on a ball bearing pivot it gives a uniform and balanced revolution which makes the shaping of the pottery much easier. Once it is in motion it can never lose its balance and goes on moving for a quite long time. The rotation is created by the help of a small stick whose pointed end is put in a small hole on the wheel nearing the edge and turned round the pivot several times.

Electric wheels are very efficient, easy and convenient to handle but are expensive: they belong rather to the mass-production outlook.

The extra things needed are: Some "bats" (a "bat" is a round or square piece of wood for holding the pot in the making), a soft, small Turkey sponge, a "wire," a piece of light gauge sheet zinc, from which at later stages to cut small scraping tools to suit yourself, a piece of old ruler about 3 inches long for trimming wet bases, etc., in the first place, a painter's "scraper" for cleaning up the tray of the wheel, and a vessel, say 8 inches diameter by 8 inches deep (an enamelled pudding-basin is good), for holding the throwing-water.

Learning throwing by means of the printed word is rather like early "swimming" on the nursery floor, but the following may help.

The condition of the clay is vital. It must be in perfect working order and its degree of plasticity about that necessary for coiling, although later you may come to prefer it a little harder—for very tall pots and big work it must be harder.

If the clay-bin is in good order there will be in it some of the pieces of clay about the size of a brick, in thorough condition, nicely

settled down after wedging or other treatment, and generally inviting for work. Take one of these, give it a final gentle kneading (not sufficient really to distrub it) to make assurance doubly sure, stand it on end, slice it from top to bottom with the wire and then, without taking the pieces apart, cut them at two places in the other direction, so as to give six cubes. Put each of these in the hollow of the palm and make them round by pressure from the other, set these balls on the shelf at the back of the wheel, and cover them with a damp cloth.

The purpose of the water is to provide a constant film of moisture between the clay and the fingers. Whenever the hands touch the clay in course of throwing, therefore, they and it must be wet. Throwing is impossible otherwise. If there is too much wet the clay will collapse, but this is an extreme case. If the water, as it very easily will, gets overcharged with clay it will hinder things seriously. The water-bowl should therefore be cleaned out very frequently.

1. **Centring.** The first stage in "throwing" is to get a dome of clay in the dead centre of the bat. See that the bat is quite dry. Press a ball of clay in the middle. Dash a little water on the top of the clay (if this water gets underneath the clay the latter will "slide"). Place the hands round the clay somewhat as though they were grasping an apple but with the lower edges of them almost touching the bat and the thumbs free, and give the hands rigidity by jamming the elbows against your sides. Press the clay firmly with the palms. The rotation of the wheel will now force the clay through the space at the top of the hands, and cause it to assume the shape of a cone or lighthouse. This done, place the thumbs on the 'roof' of the lighthouse, press hard, slightly slacken the grip of the palms, and the clay will assume a dome shape. Bear in mind to keep the hands wet all the time. Then make a "lighthouse" again, and then bring the clay back to the dome shape. In making a pot this operation is always repeated several times, because it serves to satisfy one that the clay is in good condition for work—if it reveals any defects in the clay take another piece.

But the other stages in the making of a pot should be proceeded with as soon as you can get a "dome" central enough: perfection in centring will come because it is a thing you have to do every time you make a pot, and one gets the "feeling" of the thing much more quickly by trying a whole

pot each time. Nevertheless, the "dome" should always be centred as well as ever possible.

2. **Forming the Base and Walls.** Place the palms round the clay as before and drive the thumbs right down into the centre of the dome, stopping short of the botton. Take the piece of ruler, hold it firmly against the junction of the dome with the bat, and clean off any odd clay from the outside surface so as to leave reasonably straight sides. It now remains to expand the thick walls and base of the transformed dome into the thin walls and base of the pot.

3. **Drawing Up Base and Walls.** Much is heard of the potter's thumb, but for a great many purposes the potter's knuckle is much to the point. "Drawing-up" is, for present purposes, best done by supporting the clay inside with the length of the left index-finger, this figure being steadied by the others held behind it is as far as the size of the pot permits; and pressing outside with the right forefinger, whose top joint has been bent down to its base, the "thumb" side of it being used. Remember that the hands must always be steadied by the elbows as described. The clay will not work up properly unless the finger that presses is opposite the finger that supports.

   The "Drawing Up" is done in stages. Commence work at the junction of the base with the bat and taking great care to press uniformly, get the walls somewhat thinner and taller. Now attend to the base. Let the right hand gently support the pot and let one finger of the left hand press into the base and transfer clay from it to the bottom of the walls. Then support the walls with the left forefinger again and proceed to thin out the walls again by pressure from the right knuckle. This thinning process is continued in successive stages until the walls are sufficiently thin. At the end of each stage the top edge of the pot should be looked to. The clay there is very apt to get weak at first: it should be cut down with the wire rigorously until good sound clay is reached.

   Whether cut or not, the edge should be "made" each time, by supporting the edge between finger and thumb of the left hand and slightly pressing it downwards with the right forefinger. In the course of early work the sides of the pot are

almost sure to get pushed out of the straight. The way to correct this is to place the palms of the hands on the outside of the pot and very gently press them whilst the wheel is rotated, and to do it as soon as the trouble arises. But it is not a very desirable operation, and where the trouble is pronounced it is almost best either to start again or to incorporate the bulge into the shape, complete the pot, and then start another straight one. Parts of a pot altered by the palms of the hands should always be gone over again by the normal process of drawing up.

When the shape is finished, sponge the base inside with the sponge of sponge-stick, clean up the junction of the base with the bat by use of the piece of ruler, sponge the rest of the bat dry, carefully "wire" the pot between its base and the bat, holding the wire very taut and, as it were, scraping the bat with it all the time to prevent cutting through the base, and set aside to harden, the severed pot being left on the bat for the first moisture to dry off.

Outward curves are produced by pressing with the left forefinger made into the knuckle mentioned from the inside and supporting the pot with a similar knuckle of the right forefinger or the flat of that finger according to circumstances: where such curves are near the base it is well to leave a little clay there for the purpose. A neck is produced by leaving a good thickness of clay where it is to come and later thining this out. There is no golden rule as to whether the top or the bottom of a complex shape should be completed first. So much depends on the actual shape and the general state of the work, but generally speaking it may be taken as safer to keep the bottom of the job strong so as to prevent the danger of collapse. However, by the time the pupil can throw a good tall shape satisfactorily he will probably have developed a technique suited to his own personal idiosyncrasies. The great thing is to understand the principle of the wheel.

In the early stages, from half an hour to an hour is ample at one spell, and two spells a day is a good allowance. Particularly whilst centring, one should not keep the eyes fixed on the rotating clay. There is little need for this in the early stages of the pot, and it is tiring.

The ideal pot is of uniform thickness throughout, no matter what its complexity of shape. Great attention should be given to the junction of the walls with the base. Even with the best throwing there is a tendency to leave clay here, and to make sure that uniformity in reason to being secured the student should from time to time wire a pot in half from the top downwards.

Lids with knobs are made by forming a dome, then flattening from the circumference and using the surplus for the knob. For this type of lid the pot will have to have a "gallery." To get this make the top of the pot a little thicker than usual and indent some square-edged thing (such as a piece cut from the sheet of zinc) into the inner circumference of the edge. It is best in the case to make the lid a little larger than the pot and to trim it when leather hard. Pots and lids should both in any case he made from clay having the same degree of moisture. If the pot be thrown with a concave flange, and the gallery made at the junction of the flange, it is possible to provide for a little "play," and thereby get round what is apt to be a troublesome point where the making of single articles in concerned.

To make a lid with an under-rim, throw it upside down and attach the knob afterwards.

Bedroom candlesticks are made from a "dome" by inserting a finger some inches away from the centre and revolving the wheel; the centre part becomes the candleholding part by means of making a central depression in it and turning over the edge of this, and the remainder is formed into the saucer. The handle is attached later.

Adapting the method described above when the pots are made they are kept in a cool place for 2 to 3 days when the water in them was absorbed they should again be placed on a lump of clay on the wheel with their upside down to scrape off the unevenness of the surface and to give required correct shape to their body and stand. When this was done they are then to be kept in the sun for 2 to 3 days until they are thoroughly dry and fit for baking.

As we are not attempting glazed pottery there is no need for setting up of a proper scientific kiln. So it is suggested to bake the pottery in a most primitive way.

First of all on the ground make a bed of straw of about three inches thickness. Place a layer of cowdung cakes on it. The pots are arranged on the cowdung cakes and then with another layer of cowdung cakes on it arrange a few more pots on that and then again and so on. At last the thing takes the shape of a small Egyptian pyramid. Cover the outside of the pyramid by broken shirds and clay to prevent smoke and wind from entering in. Then set fire to it and the pyramid is left burning for 10 to 12 hours after which break open and take out the pots.

Rub the pot with a piece of sand paper to make the surface smooth. Colour the whole body of the pot with any plain colour to your choice. Powder colour is best suited for this purpose and you should mix a little gum to make it more adhesive. When it is dry draw a suitable design round the pot in pencil and colour the design in different colours. After 3 or 4 days with a soft flat brush of about 1 inch thickness give a coating of copal oil varnish to have a glazed effect.

16. Fabric Printing by Wood Block Process

When working on fabrics and a more permanent design is required then printer's ink is recommended. Materials printed with this can be carefully washed in warm soapy water. The printer's ink is usually supplied in the right consistency, but if the ink appears to clog on the material then the ink can be thinned with a little copal varnish or thinning medium.

Making the Block. The wooden Block is cut according to the size of the design. An inch thick block will do, but thicker blocks are also quite good. The wood should not be too much of a porous kind and the same time it should be soft. The design is traced out on the reverse, and then with the gouges and the cutting instruments the design is cut. The edges should not be vertical but at angles of 60° degrees from the base outwards. Edges should be finished carefully. A little sandpapering is good for the smoothness. The block is now ready and the ink is rolled on carefully in the right consistency. A few tries should be made before the actual printing to secure better results.

Printing. The fabric is placed tightly stretched on a hard smooth surface. If the fabric is thick then there should be

no difficulty in the printing. But if the fabric is thin and porous and therefore bound to be absorbent, then sheets of newspaper are placed or blotting paper on the smooth hard surface and then the fabric is placed for printing. Quick hard pressure is required for good results. The block should be very carefully removed from the fabric to prevent smudging.

If a continuous design is being done the same process is repeated but the block should be carefully placed next to the last print if an effect of continuity is needed. Border designs are done in much the same way. It is advisable to clean the blocks periodically during a long printing process to prevent any clogging.

Suggested Articles. Handloom cloth printed upon with designs. Designs should be original when fluency is gained. Border designs on handkerchiefs, serviettes, cushion-covers, or any such household articles that may be made attractive.

17. Lino-cut

If the printing of small units or designs is required then corks, sticks and potatoes will do, but if the printing is large then linoleum will serve the purpose. Linoleum can be cut much easier than wood or cork.

Materials and Tools. Linoleum, white paint, penknife, gouges, ink and paper. Thick brown paint, penknife, best suited for block-printing. The gouges are used for removing the unwanted linoleum. Woodcarving gouges are suitable. Suitable printing inks are found in Indian or Chinese ink, printers ink etc. Readily absorbent paper should be used and the best is rice-paper, cyclostyle, printing and blotting paper.

General Directions. Make a drawing of the design against the white background of the linoleum which has already been treated with white paint in order to facilitate clear cutting of the design. It must be carefully remembered that the design or the tracing must be reversed on the lino so that on printing the design will come out correctly. After tracing the outlines in black and filling in the spaces which are required to come out on the print in black, the gouges are then used to remove the areas in white. One should try not to make the printing edges vertical, the cut should slant away from the

base at 60′ degree angle. After cleaning and finishing of the edges as smoothly as possible a thin layer of black paint is brushed on the surface. The printing paper should be placed on a hard flat surface, the floor will be most suitable. The cut and treated block is then reversed onto the paper with the design facing the paper. Press the block with the whole body weight for a few seconds. If a press is available, better results can be attained. Now very carefully remove the block from the paper so as to prevent any smudging or sliding of the block on the paper. If you wish to print on a fabric then a few sheets of newspaper or blotting paper should be placed under the fabric for better results.

Suggested Articles. A few simple blocks are made and a lot of free printing is done in order that a certain amount of fluency is gained in the cutting and the correct application of ink. Then simple border designs can be tried. Small decorated cards, monograms, animal cut-outs, etc.

18. Leather Work (Batick and Embossing)

Materials and Tools. Calfskin, sheepskin or suede leather, sharp knife, leather work tool, colours, leather punch, laces, sheet of glass for cutting on, and a sponge for damping the leather. Suede leather is lighter than calfskin or sheepskin and will not stand embossing (modelling or raising the surface for relief). Scraps of leather will find its use in book-marks, scissors-cases, small table mats and calendars. These articles just mentioned will look better in suede. Calfskin or sheepskin is too costly to buy in large quantities.

Suede Work. The outline of the book-mark is traced on the leather and then cut on the sheet of glass. Initials may be cut out or painted in, fringes make it more attractive. Since embossing is difficult on suede, then if a raised effect is required for the initial or the design, the design or the initial should be cut out on a separate piece or suede (coloured if required) and then glued on.

Embossed Work. Calfskin is best suited. Articles can be sewn or laced together. For lacing, holes are punched at intervals and then thin leather thongs or laces are cut and smoothed out with water, then the lacing is done in any fancy

pattern required. The punched holes should not be too close to the edge of the leather, or the holes are liable to tear. For actual embossing, the design is traced out on the leather and then the leather is damped. For example, let us follow the embossing of a simple monogram. The monogram is embossed by working or pressing down the background after the leather has been damped. Place the leather on a sheet of glass or piece of tin when embossing. To emboss the letters up or the design then these surfaces are pressed from the back for the raised effect. Any other simple filling can be done with the tools in the background or in the foreground. Punching is then done if lacing is required.

Suggested Articles. Simple book-marks. comb or scissors-cases in suede until a certain amount of manual dexterity in achieved. Then go onto embossing, here handbags, wallets, belts, etc., can be made. When embossing first starts the designs should be large and simple until the embossing becomes easy and the required effects are achieved.

19. Relief Work in Putty

20. Projects and Friezes involving Co-relation of Art and Craft

21. Weaving with Crepe Paper or Raffia

Materials. Paper, coloured streamers and cardboard. In order to weave, we actually require strips of coloured crepe paper, say an inch wide and the lengths may vary according to the work that is to be done. Then an 8 inch square piece of paper is cut out and in the paper long say 6 inch slits are made at intervals of an inch. The coloured strips are then weaved in and out of the slits and interesting patterns can be made. Mats can be made in this way. The use of many colours can make the articles more decorative. One can use a cardboard loom for the weaving have large serrated edges to hold the paper strips.

This form of weaving can also be done in raffia which is somewhat crinkly and stretchy. Interesting things can be done with raffia. A cardboard tube about 1½ inches long can be wound in and out of the tube with coloured raffia tightly together and a serviette-ring can be made.

Suggested Articles. Paper-mats. Serviette-rings, and tea-cosy covers etc.

CLASS VII

The syllabus for this class is the same as that of Class VI. But the quality of work should be slightly higher than that of Class VI. The children are advised to try their hand at as many of the Arts and Crafts as possible. For actual class examinations however a child should be required to attempt only one from the Arts Section and one from the Crafts Section.

The question paper should be set on all different groups of the Art Section. The duration of time for the Art Paper should be three hours.

No formal paper should be set on the Crafts Subjects, but candidates should be required to submit one finished product of their own choice which must be original, decorative and useful. The work must be unaided. To finish their work, no candidate should take more than fourteen hours time, working two hours a day. which must be done during the school hours and in the presence of a supervisor.

CLASSES VIII AND IX

Section A—Art

1. **Plant.**—Study of plant with flowers in pencil, black and white and finally in oil or water colour from nature.

2. **Figure.**—Study of human form from life models. The model need not be made artificially stationary, which will make itself uninteresting or it should not have too much of movements to trouble the young student. A street hawker, a cobbler at work or any other craftsman engaged in his work will be very suitable for the purpose.

3. **Original Imaginative Composition.**—After the student has acquired a considerable knowledge of the human form he or she may be asked to compose subjects with figures in colour. Simple subjects should be selected from present day life, history, anecdotes from epics or mythology etc.

4. **Textile design.**—Simple ornamental design in colour for printing on textile. The students should also be introduced with the method of printing and that his or her design should have the indication of the technique for printing it out.

5. **Poster.**—Study of design and laying out with suitable letterings in flat colour. The knowledge of reproducing it, if necessary should be known to the student and the design should also be indicating that.

6. **Lino cut.**—Study of making pictures or designs in black and white and to make blocks for printing in linoleum with the help of instruments.

7. **Fabric Printing.**—Prints in wood blocks on a piece of cotton or silk fabric with a simple design.

8. **Plaster work.**—Simple articles—broaches, clip or toys in plastic.

9. **Book-binding & Illumination.**—Book bindings here should necessarily mean to make a complete book form, stitching out several formats of paper together and binding it finally with board. The cover should also be illuminated with simple designs.

Section B—Craft

1. **Pottery.**—Making of ornamental designs in colour and applying them on the surface of terracotta flower vases, utensils etc., obtainable from market.

2. **Leather.**—Making bags, portfolios, book-covers, or any such article in leather and illuminating their surfaces with suitable designs in colour in embossing or in batik process.

3. **Fret work.**—Making designs in ply wood, hard board or in masonite boards by perforating them with the fretsaw, and to use them in the making of toys, models etc.

4. **Alpons.**—Study of ornamental and traditional forms of the design and their suitabilities for different ceremonial uses.

5. **Model making.**—To make models in wood, board, paper, plaster of paris etc., of various articles, *viz.*, boats, steam ships, cottages, buildings, railway coaches or locomotives or dam sites.

6. **Interior Decoration.**—Making a model of a room first and making also suitable miniature furniture for that, the student should show the inside decoration with paintings on the walls as well as fabrics for upholstery and window curtains. The model of the room need not be a complete one, only a portion with two or three walls would do.

Suggestions for Alternative Courses in 'Heavy' Crafts suitable for Boys' Higher Secondary and Multipurpose Schools

AIM

To awaken the student's interest in learning 'by doing.' To show that there is pleasure in 'doing things,' and that education is completed only by co-ordination between hand and eye.

To awaken the student's interest in the progress of the modern world in things mechanical (a) for it is necessary for the advance of India (b) for it will indicate avenues of future employment (c) for it will show those who have mechanical or academic inclinations.

Pitfalls to Avoid

In all activity lessons 'self-expression' is essential. In India too many handwork schemes have failed because of the deadening effect of 'having to make' whereas the child should 'want to make.' In the syllabus below the joints, finishes, etc., are a means to an end, not an end in themselves; individual projects and class projects will incorporate the basic constructions while giving scope to enterprise. The teacher should help and suggest, but not choose or order, otherwise the interest and enthusiasm will be lost.

Materials

There is no need for expensive materials for most of the projects can be constructed from material at hand: tea chests, packing cases, tins, cardboard, plastic scraps. For those children who show considerable aptitude, correct materials can be supplied.

Equipment

In the early stages little equipment is needed, while in the more advanced stages the capital expenditure will be very moderate: a list of equipment will be found at the end of the syllabus.

Teaching Power

The most necessary equipment necessary for the teacher in the early stages is enthusiasm and enterprise. Dozens of simple models can be found in magazines, school papers, the bazaars and stores. Once the child has chosen his project it is the teacher's task to see that his plan of construction is logical, to see that he does not deviate from a once chosen plan—otherwise the activity period will become

a waste of time—and to see that the finish is good. A good finish will delight the student, but a poorly finished article—no matter how well designed—will please nobody.

Activity Times

It is preferable to allow at least 1 hour period for a child can finish an object in that time. In the higher classes two such periods per week would be necessary.

Activity Classes

Classes should be termed 'Activity' or 'Handwork.' Neatness, order and planning are essential, with emphasis on cleanliness of person and working space.

CLASS VI SYLLABUS

Time allotted each week: 1 hour

Materials Suggested

As the object of this course is to develop hand and eye-co-ordination, a wide selection of materials is allowed. Each instructor will then be able to select the material most readily available. and one with which the instructor is familiar.

Cardboard
Match boxes, cigarette boxes
Plasticine
Raffia, Reed Tex, Bamboo
Leather
Woodcarving

Examination

Owing to the wide variety of material permitted, it would be impracticable to set a written, or formal, examination. It is suggested that each child be permitted to bring into the examination hall whatever material and equipment are desired; that 1 hour be allotted. and each child be permitted to make the object of his own choice.

Suggested list of objects within the scope of the examination:

Cardboard: Photoframes, bottle holders, napkin rings, desk sets, letter racks, jewel or powder boxes, pencil cases.

Match boxes: Doll's house furniture, toys (trains, building blocks etc.) stud and trinket boxes.

Cigarette boxes: Use as cardboard.

Raffia, Reed-Tex, Bamboo: Napkin rings, bottle covers, baskets, table mats, photo frames, fans.

Plasticine: Maps, portraits, statuettes, homes and dwellings in foreign lands.

Leather: Plaited work (wristbands, watch and key straps, chin straps for hats, wallets) belts, mocassins, writing material holders.

Woodcarving: Table mats, picture frames, ash trays, wall plaques, ships of foreign lands, Indian river craft, cocktail picks, spoons.

CLASS VII SYLLABUS

Time allotted each week: 1 hour

Materials Used

Plastic, plywood, cardboard, tinplate.

Tools Required

Several pairs of 8" tin snips
One pair of curved 8" tin snips
2 or 3 pairs of long nose pliers, bull nose pliers and wire cutters
Some wooden or plastic mallets
2 or 3 claw hammers (light)
Scissors
An electric soldering bit
Some tenon saws, fret saws, coping saws
Some files and emery paper

During this year the child should be encouraged to make for himself simple objects from the illustrations that the teacher offers.

SOME SUGGESTIONS:

Plastic

This material is cut as wood, polished with a file and emery paper. It can be easily bent to shape by heating in a moderate oven or with a hot flat iron. Plastic cement is easily available and simply used.

Objects suitable are: Broaches, rings, ear-rings, paper knives, bracelets, powder bowls, cigarette boxes, pen racks, candle sticks, picture frames, serviette rings etc., etc.

Cardboard

This material may be so heavy as to be treated as wood or of the lighter type suitable for cutting with knife or scissors. Developments

such as used in solid geometry are best made in cardboard. Objects made of cardboard can be covered with canvas, leather, imitation leather, paper, lacquer etc.

Objects suitable are: Pencil cases, book covers, letter holders, lunch cases, stationery boxes, powder and cigarette holders, animated toys, clock cabinets etc.

Three Ply

This material can be permanently glued with such preparations as 'Pliobond,' may be steamed to curved shapes, or simply tacked.

Objects suitable are: Attache case, pencil case, animated tops, dolls' house, dolls' furniture, maps, model trains etc.

Tinplate

With a wheel type tin opener, most tins can be turned into presentable objects. Paint or lacquer will give a good finish.

Objects suitable are: Candle holder, lamp, round scoop, sweet bowls, drinking cups, toys *e.g.* power boat, steam engine, etc.

Examination

All models to bear the name of the child clearly, the candidate to submit what he considers the best of the year's objects. These objects should be returned to the children. If a final examination is considered necessary in addition it should be on the same lines as the Class VI Examination.

CLASS VIII SYLLABUS

Time allotted each week: 1 hour

During this year the student is required to incorporate into his projects over the course of the year selected sections of the syllabus listed below:—

Woodwork

Description and uses of Common Forms of Timber—Teak, C. P. Teak, Babul, Sissoo, Plywood. Description and care of simple Hand-Tools—correct grinding and Sharpening of Tools.

Practical

Tee joints, halving joint, simple butt joint, mortise and tenon joint. Use of plane, brace and saw.

Students must show an illustration, either drawn by themselves. or taken from some book of the project they wish to construct.

Suitable objects are: Tea pot stand, pencil case, hat rack, dahl stirrer, match box holder, book ends, lamp stand, candle holder. jig saw puzzle with box, toys, picture frames, book racks.

Theory

Talk should be given on the correct use of these tools the text book being 'Basic Tools,' MacMillan Rs. 18.

Examination

A theory paper requiring a drawn sketch with explanation, taking 40 minutes. A practical test taking 1½ hours.

Metalwork

Use of tin ships, scribe, compasses, hammer, rivets, hacksaw, file, drill and forge.

From tinplate and with the use of solder, the following can be made: Picture hook, work lable, rectangular tray. splayed tray, lap joint, seam folded and wired edges.

From heavier metal (1/8" thick *e.g.*) can be made the following: Cleat, door handle, drawer pull, gate hook, box handlecentre square, latch, stand etc. etc.

(Heated metal can be twisted to shape easily in the vice).

Examination

Theory requiring the draining of a tool of trade with a description. Time 40 minutes. Practical to incorporate the processess carried out above. Time 2 hours.

Plastic Work

If so desired plastic work could be substituted for one of the sections already listed. More involved projects would be required.

Examination

Theory on the composition and methods of using simple plastics. 40 minutes. Practical examination. Time 1½ hours.

CLASS IX SYLLABUS

Time allotted each week: 1½ hours

The Syllabus will comprise the following Crafts:—

Plastics.
Woodwork.
Tinwork.

School may specialise in ore or explore all three of these areas.

Plastics

The students should be familiar with the commoner types of plastics, their appearance, qualities, commercial uses and methods of treatment.

As almost each teaching period will produce a finished article, the student should be encouraged to develop his own designs. These designs can be made practical by cementing, bending and cutting.

Cutting and boring, polishing and buffing, bending by heating and the introduction of forms and ies. Glueing or cementing.

The most common and easiest plastic for school use is Perspex, so the examination will be set so as to employ this material.

The articles made from plastic are readily saleable so this activity should be quite self supporting.

Objects to make are: Pen holders, paperweights, pencil stands, powder boxes, rings, buckles, brooches, paperknives, napkin holders, cigarette boxes, photo frames, watch and torch glasses, candlesticks. lampshades, lamp holders, etc.

Text

"Craftwork in Plastics"—Bentley & Dawes (Arnold).

Woodwork

The child should be familiar with common types of wood. The child should be familiar with the basic joints and tools. (An excellent teachers' handbook dealing with all tools and joints, set out year by year in a five years' course is: "Woodwork in Theory and Practice" by John A. Walton, published by George A. Harrap & Co., through their Calcutta agency). The child should learn to apply the cross halving, common m. & t. joints. bridle and tee joints, mitre and butt joints. Glueing. Dewelling.

Wood lathe work if one is available (a treadle machine can be readily constructed for a few rupees).

Objects that could be made are: Serving trays, glass trays, tea wagons, cocktail stools and tables, wall cabinets, candle-sticks, book troughs, light stands, pencil stands, paperweights, brackets etc.

Texts

(1) Basic Tools—Deshpande (*Orient Longmans*).
(2) ABC of Woodwork—Hayword—(*Evans Bros.*)
(3) Woodwork in Theory & Practice—J. Walton (*George Harrap & Sons.*)

Tinwork

The processes involved are cutting, cleaning, soldering, bending decoration.

Objects that can be constructed are: Napkin rings, pencil cases, cigarette cases, scoops, mugs, candlesticks, lamps, balances, Scientific apparatus *e.g.* Hero's hydrometer, steam turbine etc. Toys can also be constructed *e.g.* locomotive, steam boat, telephone, photo-enlarger.

Text

"Tin Can Craft"—Bagley (*Featherstone Press*).

Note.—For the actual examination candidates will be permitted to choose one of the three subjects—Woodwork, Plastics or Tinwork but a knowledge of all three will be of great value. One paper comprising theory and practice will be set.

Equipment for a CRAFT Class of 18 Boys for the above Syllabus

Provision for 9 working places with 9 vices (woodwork).
One wall bench with 18 screw vices, 4", plain.
18 ball pein hammers.
12 Eclipse adjustable hacksaw frames.
18 try squares.
18 scribers.
18 steel rules (marked in sixteenths and eighths).
6 centre punches.
2 pairs 6" spring dividers.
2 pairs outside calipers.
2 pairs inside calipers.

12 cold chisels 3|4".
6 three square bastard files 10".
6 hand files smooth 10".
3 each of round, square and half-round files.
2 screwdrivers.
1 anvil.
1 forge with blower.
tongs.
soldering irons.
6 pairs assorted pliers.
6 pairs tinsnips 8".
3 pairs tinsnips 8" curved.
6 pairs wood mallets.
6 pairs metalworkers mallets.
1 breast drill to 3/8".
1 set of steel drills 1/8" to ½".
1 set of woodbits 1/8" to 3/4".
2 wood braces.
12 wood chisels ¼".
12 wood chisels ½".
assorted wood chisels 3|8", 5|8", 7|8", ¾", 1".
6 steel planes, Falcon or Stanley. 2½ wide.
assorted wood planes.
6 tenon saws.
6 dovetail saws.
1 24" handsaw.
1 coping saw.
3 fret saws.

This list is a minimum requirements list, and many of the articles can be procured second-hand or made locally or in the school. In the school can be made scribers, callipers, surface gauges, tongs, hollowing blocks, mitre boxes, bench hooks etc. Indian made articles are satisfactory and often cheaper than imported. Some of the best bargains in tools can be had in Radha Bazar and Chandney Chowk.

It may not be possible to purchase all equipment at once, so in that case limit the number of vices as they will be expensive.

In motorised equipment the first essential is a bench drill to take to ½".

Alternative Crafts Syllabuses (For Technical Students)

CLASS VII SYLLABUS

Time: 2 Double Periods per Week

1. Combination of Wood and Metals

A. *Layout*:—

(i) Transfer of Pattern to Wood or Metal with the aid of a Paper or Metal Template.
(ii) Trace with Carbon paper or scribe.

B. *Cutting*:—

(i) Use of Hacksaw.
(ii) Use of Tinners Shears of Aircraft Snips.
(iii) Use of Jeweler's Saw.
(iv) Use of the Jig Saw.
(v) Use of the Caping Saw.
(vi) Use of the Hand Saw.

C. *Assembling*:—

(i) With Wood or Metal Screws.
(ii) By soldering.
(iii) Bp using Rivets.
(iv) By gluing.

D. *Finishing*:—

(i) By using Files.
(ii) Sandpaper.
(iii) Emery Cloth.
(iv) Grinding Stone.
(v) Shellac.

2. Foundry Work

A. *Patterns—their importance*:—

(i) Simple—one piece patterns.
(ii) Two piece patterns.
(iii) Two or more piece patterns with cores.

B. *Moulding*:—

(i) Tempering the sand.
(ii) Placing the Pattern.
(iii) Ramming up the Mould.

(iv) Melting the Metal.
(v) Gateing the Mould.
(vi) Pouring.
(vii) Cleaning the Casting.
(viii) Finishing the Casting.

The above Syllabus can be followed by the use of the following Projects:

1. *Combination products of wood and metal—*
   (i) Letter Openers.
   (ii) Book Ends.

2. *Foundry Work—*
   (i) Paper Weights.
   (ii) Book Ends.
   (iii) Wall Plaques.

CLASS VIII SYLLABUS

SHEET METAL, ART METAL, WOOD TURNING AND FORGING

Time: 2 Double Periods per Week

1. (1) Metals commonly used.
   (2) Layout and development of patterns.
   (3) Cutting and Forming Metals.
   (4) Hemming.
   (5) Wire Edge.
   (6) Forming of Metal by hand.
   (7) Soldering and Fluxes.
   (8) How to make common metal joints.
   (9) Cleaning and Finishing.

2. (1) Glueing stock for Lathe Turning.
   (2) Centering Work.
   (3) Turning tools and their proper use.
   (4) Turning wood on the Face Plate.
   (5) Finishing on the Lathe.

3. (1) Firing the Forge.
   (2) Drawing Down.
   (3) Jumping up or upsetting.

(4) Bending.
(5) Welding.
(6) Twisting.
(7) Colour Finishing.

The above Syllabus can be followed by the use of the following Projects:

1. Sheet Metal & Art Metal

(1) Sugar Scoop.
(2) Book Ends.
(3) Aluminium or Copper Cigarette Holders.
(4) Copper or Brass Wall Vase.

2. Wood Turning

(1) Table Lamps.
(2) Fruit Bowls.
(3) Powder Boxes.

3. Forging

(1) Chisels.
(2) Box Handles.
(3) Book Ends.
(4) Khurpie.

Texts—"Basic Tools"—Deshpande (*Orient Longmans*).
"ABC of Woodwork"—Haywood (*Evans Bros.*)
"Woodwork in Theory and Practice" (*George Harrap & Sons.*)

CLASS IX SYLLABUS

WOODWORK

Time: 1 Double Period per Week

1. General Information

1. Introduction to Woodwork.
2. Understanding a Working Drawing.
3. Purchasing and Measuring Lumber.
4. Planning procedure.
5. Safety.

2. Hand Tool Processes

1. Measuring and Laying out.
2. Saws—Kinds and their uses—A Back, Coping, Rip and Crosscut.
3. Squaring Lumber.
4. Planes—Kinds and their uses (a) Block, Jack Model Jointer and Smoothing Planes. (b) Planing a Surface, edge and end.
5. Measuring Tools—(a) Rules—extension, flexible, Combination Square, Framing Square and Try Square.
6. Chisles—Cutting and Trimming—(a) Various sizes, their use and application.
7. Hammers and Mallets.
8. Brace and Bit Augers—(a) Types and kind of drills and Augers.
9. Fastners—
   (a) Types of Nails and their use.
   (b) Screws—Round Head, Flat Head, Oval Head and Special.
   (c) Corrugated Fastners.
10. Flues—
    (a) Animal, Fish Synthetic.
    (b) Fluing and clamping.
11. Finishing and sanding—
    (a) Sandpaper—Flin, Aluminium oxide, Silican carbide and Farret.
    (b) French Polish.
    (c) Varnish.
    (d) Shellac.
    (e) Lacquer.
12. Care and Maintenance of Hard Tools.

3. Machine Tool Processes

1. Sawing on the Circular or Table Saw.
2. Sawing on the Jig Saw.
3. Planing on the Jointer.
4. Boring or Drilling on the Drill Press.
5. Turning on the Wood Lathe.
6. Care and Maintenance of Machine Tools.
7. Safety.

CLASS IX SYLLABUS

METAL WORK TURNING

Time: 1 Double Period per Week

1. Types of Lathes

(a) Engine Lathes.
(b) Turret.
(c) Multi-Spindle etc.

2. Lathe, Tools and Accessories

Carriage, Tool Post, Tool Holders. Centers, Chucks, Face Plates, Lead Screws, Compound Drills, Center Drills. Knurling Tools.

3. Measuring Tools

(a) Outside and inside Callipers. Steel Rule, Micrometer Callipers and Depth Gauges.

4. Processes

(a) Centering in Four Jaw Chuck (by File—by Indicator) Straight Turning. Taper Turning, Drilling, Boring, Tapping, Knurling and Facing.

The above Syllabus can be followed by the use of the following Projects:

1. Gear Blanks.
2. Collars for Milling Machines.
3. Stud Bolts.
4. Wood and Engine Lathe Face Plates.
5. Lathe Mandrels.
6. Washers.

SYLLABUS FOR CLASSES X & XI

METALWORK, SMITHY, FITTING AND FOUNDRY

Time: 2 Double Periods per Week

A. Smithy

1. *Steels suitable for forging:—*

(a) Manufacture of Ferrous Metals.
(b) Heat Treatment.
(c) Carbon in Steel.
(d) Hardening, Tempering and Annealing.

2. *Bench Work and Fitting Tools*:—
   (a) Layout and Measuring Tools.
   (b) Types of Hacksaws.
   (c) Chisels.
   (d) Files and Scrapers.

3. *Drilling*:—
   (a) Types of Hand Drills.
   (b) Power Drills.
   (c) Drill bits (types and sizes).
   (d) ————————

4. *Screw Cutting*:—
   (a) Taps and Dies.
   (b) Standard Types of Taps and Dies.

5. *Tools*:—
   (a) Hearth Types.
   (b) Forge Types.
   (c) Anvil.
   (d) Swage Blocks.
   (e) Power Hammers.
   (f) Chisels.
   (g) Swages, Punches and Hammers.
   (h) Tongs and Fullers.

6. *Processes*:—
   (a) Drawing out metal.
   (b) Bending.
   (c) Offsetting.
   (d) Making Scrolls.
   (e) Twisting.
   (f) Upsetting.
   (g) Heading.
   (h) Welding.

B. Fitting

1. *Hand Tools used in Fitting*:—
   (a) Hacksaws and Hammers.
   (b) Chisels.
   (c) Files and their uses.

2. *Care and Maintenance of Tools*:—
   (a) Correct Sharpening of Chisels.
   (b) Relining Forge and Funnels.
   (c) Care of Precision Measuring Tools.

3. *Measuring Tools*:—
   (a) Micrometer Callipers.
   (b) Vernier Callipers.
   (c) Scales (Foot and Metric).
   (d) Thread Gauges.

4. *Holding Devices*:—
   (a) Bench and Portable Parallel Jaw Vices.
   (b) Leg Vices.
   (c) Hand and Pin Vices.
   (d) Drill Chucks.

5. *Drilling Machines*:—
   (a) Bench Drill.
   (b) Breast Drill.
   (c) Portable Electric Drill.
   (d) Reamers.

6. *Thread and Thread Cutting*:—
   (a) Types of Standard Threads.
   (b) Taps and Dies.

7. *Bolts and Nuts*:—
   (a) Studs, Carriage, Hexagon and Round Heads.
   (b) Lag, Expansion Shields and other methods of mounting equipment.

C. Foundry

1. *Moulds and Moulding*:—
   (a) Bench, Floor and Pit Moulds.
   (b) Casting by using patterns.

2. *Tools*:—
   (a) Riddle, Sifter and Rammer.
   (b) Slick, Spoon, Trowel and Lifter.
   (c) Bellows, Sprue Pin and Draw Pin.

3. (a) Cupola—a blast furnace.
   (b) Methods of making Steel—Bessemer, Open Hearth, Crucible and Electric.

4. *Processes*:—
   (a) Tempering Moulding Sand.
   (b) Using a One Piece Pattern.
   (c) Using a Two Piece Pattern.
   (d) Using Sand Cores.
   (e) Using Match Plates.

The above Syllabus can be followed by the use of the following Projects:

Outside Calipers, Knives, Khurpie, Spanner Wrenches, Centre Punches, Parallel Clamps, Center Squares, Blacksmith Tongs, Dovetail Marker etc.

School Guidance Pamphlets

No. 1 "Suggestions for the Teaching of Bengali as a Second Language" available from The Secretary, Association of Teachers in Anglo-Indian Schools, C/o La Martiniere College, 11, Loudon Street, Calcutta.

No. 2 "Suggestions for the Teaching of Nature Study & General Science in Schools in India" available from Orient Longmans Private Ltd., Calcutta.

No. 3 "Vitalising your School Library" available from Orient Longmans Private Ltd., Calcutta.

No. 4 "Suggestions for the Re-orientation of Anglo-Indian Education" available from Orient Longmans Private Ltd., Calcutta.

No. 5 "Suggestions for the Creative Teaching of Arts and Crafts in Schools in India" available from Orient Longmans Private Ltd., Calcutta.

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